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TITLE: Baseline selection method for use in a wireless location system
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ABSTRACT: A Wireless Location System includes signal collection systems and location processors for processing digital data provided by the signal collection systems. To determine the geographic location of a mobile wireless transmitter, time difference of arrival, or TDOA, data is determined with respect to a plurality of first signal collection system/antenna second signal collection system/antenna baselines. A method for selecting baselines for use in location processing comprises calculating a number of parameters for each of the plurality of baselines, and including in a final location solution only those baselines meeting or exceeding predefined threshold criteria for each of the parameters.
22 Claims,   35 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 28

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Detailed Description Text - DETX: The Wireless Location System uses methods similar to calibration for performance monitoring on a regular and ongoing basis. These methods are depicted in the flowcharts of FIGS. 2K and 2L. Two methods of performance monitoring are used: fixed phones and drive testing of surveyed points. The fixed phone method comprises the following steps (see FIG. 2K): standard wireless transmitters are permanently placed at various points within the coverage area of the Wireless Location System (these are then known as the fixed phones) (step S-30); the points at which the fixed phones have been placed are surveyed so that their location is precisely known to within a predetermined distance, for example ten feet (step S-31); the surveyed locations are stored in a table in the AP 14 (step S-32); the fixed phones are permitted to register on the wireless communications system, at the rate and interval set by the wireless communications system for all wireless transmitters on the system (step S-33); at each registration transmission by a fixed phone, the Wireless Location System locates the fixed phone using normal location processing (as with the calibration transmitters, the Wireless Location System can identify a transmission as being from a fixed phone by storing the identities in a table) (step S-34); the Wireless Location System computes an error between the calculated location determined by the location processing and the stored location determined by survey (step S-35); the location, the error value, and other measured parameters are stored along with a time stamp

in a database in the AP 14 (step S-36); the AP 14 monitors the instant error and other measured parameters (collectively referred to as an extended location record) and additionally computes various statistical values of the error(s) and other measured parameters (step S-37); and if any of the error or other values exceed a pre-determined threshold or a historical statistical value, either instantaneously or after performing statistical filtering over a prescribed number of location estimates, the AP 14 signals an alarm to the operator of the Wireless Location System (step S-38).